ABSTRACT

The invention provides an organometallic complex, containing oxygen free organic ligands, for the deposition of a metal, preferably copper, silver or gold, and preferably by way of chemical vapor deposition. The organometallic complex having the formula

$$[(D_o)_n\ ML_x\ ]_k$$

where M is a metal preferably selected from the group consisting of Cu, Ag and Au;

D_o is selected from the group comprising ethers, phosphines, olefins, sulfides, pyridines, carbonyl, hydroxyl, cyclopentadiene, benzene derivatives, allyls, alkyls, amines, polyamines, aniline derivatives, cyclooctadiene and combinations thereof;

n is an integer having a value from 0 to 4;

k is an integer having a value from 1 to 4;

x is an integer having a value from 1 to 4; and

L is an amidinate ligand of the formula

$$R^1\text{-}N \underline{\text{---}} C(R^2) \underline{\text{---}} N\text{-}R^3$$

where R^1, R^2 and R^3 are selected from the group consisting of alkyls, allyls, aryls, heteroaryls, hydrogen, non-metals and metalloids; and where R^1, R^2 and R^3 are different or the same.